

Docket No.: P-0187



PATENT *AF IFW*

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF APPEALS AND INTERFERENCES**

In re Application of

Confirmation No.: 5049

Hyeon Jun KIM et al.

Group Art Unit: 2623

Serial No.: 09/785,443

Examiner: Jingge WU

Filed: February 20, 2001

Customer No.: 34610

For: CONTENT-BASED MULTIMEDIA RETRIEVAL SYSTEM AND METHOD
THEREOF

RESUBMISSION OF APPEAL BRIEF

U.S. Patent and Trademark Office
Customer Window, Mail Stop Appeal Brief-Patents
Randolph Building
401 Dulany Street
Alexandria, Virginia 22314

Sir:

Resubmitted herewith is Appellants Appeal Brief in answer to the Order Returning Undocketed Appeal to Examiner dated May 30, 2006.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 16-0607 and please credit any excess fees to such deposit account.

Respectfully submitted,
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Date: July 13, 2006

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PATENT

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THEREOF**

APPEAL BRIEF

U.S. Patent and Trademark Office
Customer Window, Mail Stop Appeal Brief-Patents
Randolph Building
401 Dulany Street
Alexandria, Virginia 223134

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed December 13, 2004. A Petition for Extension of Time is also submitted herewith.

REAL PARTY IN INTEREST

The party in interest is the assignee, LG Electronics Inc. The assignment document is recorded at Reel 011565 and Frame 0229.

RELATED APPEALS AND INTERFERENCES

There are no related appeals and interferences.

STATUS OF THE CLAIMS

This is an appeal from the Final Rejection dated July 13, 2004 of claims 1-2, 4-7, 9-18, and 28-33. No other claims are pending.

STATUS OF AMENDMENTS

All Amendments filed in this application have been entered. A correct copy of appealed claims 1-2, 4-7, 9-18, and 28-33, including all entered amendments thereto, appears in the attached Appendix.

SUMMARY OF THE INVENTION

The claimed invention (as recited in independent claim 1) is directed to a content-based multimedia system and method. The system according to one embodiment includes a first color quantizer which extracts a color histogram of query multimedia data, a second color quantizer which extracts a color histogram of multimedia data to be retrieved, and a histogram converter which converts the color histogram of one of the extracted query multimedia data and the multimedia data to be retrieved into a histogram having a color space and color quantization method of the other of the extracted query multimedia data and the multimedia data to be

retrieved. For example, referring to the embodiment shown in Figure 3 of the present application and the corresponding specification disclosure at page 3, line 20 through page 11, line 24, the disclosed system includes a first color quantizer 308, a second color quantizer 308, and a histogram converter 303.

The claimed invention (as recited in independent claim 6) is also directed to a content-based multimedia method. The method according to one embodiment includes inputting query multimedia data, converting a color histogram of one of the input query multimedia data and multimedia data to be retrieved into a color histogram having a color space and color quantization method of the other of the input query multimedia data and the multimedia data to be retrieved so as to be the same as each other, and calculating a similarity between the query multimedia data and multimedia data to be retrieved on the basis of the converted color histogram and outputting a retrieval result in accordance with the calculated similarity. For example, referring to the embodiment shown in Fig. 5 of the present application and the corresponding specification disclosure at page 18, line 11 through page 21, line 3, a query multimedia data, for example, in this case a query image, is input at step S500. After a color histogram for the query image is extracted in steps S501-S505, the color histogram of the query image is converted into a color histogram having a color space and color quantization method of another input query image. Then, in step S507 (~S508), a similarity is calculated between the query image and image to be retrieved on the basis of the converted color histogram.

The claimed invention (as recited in independent claim 13) is further directed to a content-based multimedia retrieval method for retrieving multimedia data by comparing query multimedia data with multimedia data to be retrieved. The method according to one embodiment of the invention includes extracting a color histogram of the query multimedia data, extracting a color histogram of the multimedia data to be retrieved, comparing the extracted color space and color quantization method of the query image with the color space and color quantization method of the multimedia data to be retrieved, and converting the color histogram of one of the extracted query multimedia data and the multimedia data to be retrieved into a color histogram having a same color space and color quantization method as the other of the extracted query multimedia data and the multimedia data to be retrieved, when the color spaces and color quantization methods of the extracted multimedia data and multimedia data to be retrieved are different each other, and performing a retrieval in accordance with a similarity between the query multimedia data and multimedia data to be retrieved. For example, referring to the embodiment shown in Figure 5 of the present application and the corresponding specification disclosure at page 18, line 11 through page 21, line 3, the method of Figure 5 includes extracting a color histogram of a query multimedia data, in this embodiment, a query image, in step S503, and reading or extracting a color histogram of a feature database about multimedia data to be retrieved, in this embodiment a retrieval object image, in step S504. Then, the method compares the extracted color space and color quantization method of the query image with the color space and color quantization method of the multimedia data to be

retrieved, in step S505, and converts the color histogram of one of the extracted query multimedia data and the multimedia data to be retrieved into a color histogram having the same color space and color quantization method as the other of the extracted query multimedia data and the multimedia data to be retrieved in step S506. Step S509 is the retrieval step.

Additionally, the claimed invention (as recited in independent claim 17) is directed to a content-based multimedia retrieval method according to another embodiment. The method according to another embodiment includes comparing the color spaces and color quantization methods of the query multimedia data and multimedia data to be retrieved, converting the color histogram of the query multimedia data or color histogram of the multimedia data to be retrieved when the color space and color quantization method of the query multimedia data and the color space and color quantization method of the multimedia to be retrieved are different, and calculating a similarity between the converted or unconverted query multimedia data and multimedia data to be retrieved, and performing a retrieval in accordance with the calculated similarity. For example, referring to the embodiment shown in Figure 5 of the present application and the corresponding specification disclosure at page 18, line 11 through page 21, line 3, the method compares the extracted color space and color quantization method of the query multimedia data, in this embodiment, a query image, with the color space and color quantization method of the multimedia data to be retrieved, in step S505, and converts the color histogram of one of the extracted query multimedia data and the multimedia data to be retrieved into a color histogram having the same color space and color quantization method as the other if

the extracted query multimedia data and the multimedia data to be retrieved in step S506. In step S507, a similarity is calculated between the query image and the image to be retrieved on the basis of the converted color histogram. Step S509 is the retrieval step.

The claimed invention (as recited in independent claim 28) is further directed to a content-based multimedia retrieval system according to another embodiment. The system according to another embodiment includes a first color quantizer which extracts a color histogram of multimedia data to be retrieved, a description means for describing color space and color quantization method of an extracted color histogram, and a second color quantizer which extracts a color histogram of query multimedia data using a method which is same as the described color space and color quantization method in order to perform the multimedia data retrieval. Referring, for example, to the embodiment shown in Fig. 3 of the present application and the corresponding specification disclosure at page 3, line 20 through page 11, line 24, the system includes a color quantizer 308, description means 306, 307, and a color quantizer 300.

The claimed invention (as recited in independent claim 32) is also directed to a content-based multimedia retrieval method according to another embodiment. The method according to another embodiment includes judging whether a color histogram of query multimedia data corresponding to a color space and quantization method of multimedia data to be retrieved is stored in advance, and calculating a similarity between the color histogram of the stored query multimedia data and the color histogram of the multimedia data to be retrieved and performing a multimedia retrieval in accordance with the calculated similarity. Referring, for example, to the

embodiment shown in Fig. 5 of the present application and the corresponding specification disclosure at page 18, line 11 through page 21, line 3, the method shown in Fig. 5 includes judging whether there is a color histogram of the query image which is extracted before (S501). If yes, the method reads a color histogram value of the query image extracted before (S502), reads a color histogram value of a feature database about a retrieval object image (S504), determines whether the color histogram of the query image is different from the color histogram (color space and color quantization method) of the image to be retrieved (S505), converts the color histogram value of the query image (S506), and calculates similarity by comparing the color histogram of the query image with the color image to be retrieved (S507). The method then determines whether the similarity is larger than a certain threshold value (S508), and if yes, outputs the image to be retrieved as a similar image (S509).

GROUND OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1-2, 4-7, 9-11, 13-18 and 28-33 are properly rejected under 35 U.S.C. §102(e) as being anticipated by Bergman et al. (hereinafter “Bergman”), U.S. Patent No. 5,564,263.
2. Whether claim 12 is properly rejected under 35 U.S.C. §103(a) as being unpatentable over Bergman in view of Yaung, U.S. Patent No. 6,512,850.

THE ARGUMENT

1. 35 U.S.C. §102(e)

A. Claims 1, 2, and 5

Independent claim 1 recites “a histogram converter which converts the color histogram of one of the extracted query multimedia data and the multimedia data to be retrieved into a histogram having a color space and color quantization method of the other of the color histogram of the extracted query multimedia data and the multimedia data to be retrieved” (emphasis added). Bergman does not disclose such a histogram converter.

Rather, Bergman discloses a system for performing a histogram conversion. As shown in Figure 19, the system includes a search engine 1902 which converts a query color histogram Q of one type into a color histogram of another type, for purposes of performing an image search in image archives 1-3. In performing this conversion, Bergman discloses that the query histogram may be in an RGB color space and that the converted histogram may be a function of this RGB color space, i.e., the Bergman converter only performs a histogram conversion based on color space. That is, at col. 13, lines 52-54, Bergman states that “[a]ssuming the new color space is derived from the RGB color space, then myhist may be obtained via a transformation, F, of rgbhist...” Further, it is noted that in the transformation example discussed at col. 13, line 57-col. 14, line 2 and referred to by the Examiner, Bergman does not disclose that search engine 1902 performs a histogram conversion based also on color quantization, as recited in independent claim 1. In fact, in the example discussed at col. 13, line 57-col. 14, line 2 and

referred to by the Examiner, both histograms appear to have the same number of bins. Bergman never discusses color quantization methods, which involve reducing an image to an appropriate number of representative colors. Further, the Examiner's comments at pages 2-4 (paragraph 5 of the Office Action) also do not address color quantization methods.

A histogram conversion is shown in the non-limiting embodiment of Figure 4 of the present application. Here, a histogram conversion is performed from one color space (RGB) and color quantization (R: five levels, G: five levels, B: five levels) into a histogram having another color space (HSV) and color quantization (H: seven levels, S: seven levels, and V: seven levels). The Bergman search engine does not perform a transformation of this type, but rather only converts histograms based on color space.

Accordingly, it is respectfully submitted that independent claim 1 defines over Bergman. Dependent claims 2 and 5 are allowable at least for the reasons discussed above with respect to independent claim 1, from which they depend, as well as for their added features.

B. Dependent claim 4

Dependent claim 4 is allowable at least for the reasons discussed above with respect to independent claim 1, from which it depends, as well as for its added features. Further, dependent claim 4 recites that the content-based multimedia retrieval system further comprises a description means for describing color space and color quantization information, which are the bases of the color histograms, wherein the description means comprises a color space description means for describing color space constructing the color histogram, and a

quantization description means for describing color quantization method constructing the color histogram. For example, referring to the embodiment shown in Figure 3 of the present application and the corresponding specification disclosure at page 3, line 20 through page 11, line 24, the disclosed system includes color space descriptor(s) 306 and color quantization descriptor(s) 307. Bergman does not disclose or suggest such a description means.

C. Claims 6-7 and 11

Independent claim 6 recites a content-based multimedia retrieval method which includes “converting a color histogram of one of the input query multimedia data and multimedia data to be retrieved into a color histogram having a color space and color quantization method of the other of the input query multimedia data and multimedia data to be retrieved” (emphasis added). Bergman does not disclose or suggest this converting step. As previously discussed, Bergman only performs a histogram conversion based on color space, not based on color space and color quantization, as recited in independent claim 6.

Thus, it is respectfully submitted that independent claim 6 defines over Bergman. Dependent claims 7 and 11 are allowable at least for the reasons discussed above with respect to independent claim 6, from which they depend, as well as for their added features.

D. Dependent claims 9-10

Dependent claims 9-10 are allowable at least for the reasons discussed above with respect to independent claim 6, from which they depend, as well as for their added features. Further, dependent claim 9 recites that the converting process for converting into the same histogram

comprises judging whether the color histogram of the query multimedia data has been extracted previously, reading the extracted color histogram value and identifying the color space and color quantization method, reading a color histogram value of the multimedia data to be retrieved and identifying the color space and color quantization method, and converting the color histograms into the color histograms of the same color space and color quantization method when the color histogram of the query multimedia data and the color histogram of the multimedia data to be retrieved are not the same. Dependent claim 10 recites that the content-based multimedia retrieval method further comprises extracting a color histogram of the input query multimedia data when the color histogram of the query multimedia data has not been extracted previously. For example, referring to the embodiment shown in Figure 5 of the present application and the corresponding specification disclosure at page 18, line 11 through page 21, line 3, the disclosed method includes judging whether there is a color histogram of the query image which is extracted before (S501). If yes, the method reads a color histogram value of the query image extracted before (S502), reads a color histogram value of a feature database about a retrieval object image (S504), determines whether the color histogram of the query image is different from the color histogram (color space and color quantization method) of the image to be retrieved (S505), converts the color histogram value of the query image (S506), and calculates similarity by comparing the color histogram of the query image with the color image to be retrieved (S507). The method then determines whether the similarity is larger than a certain

threshold value (S508), and if yes, outputs the image to be retrieved as a similar image (S509).

Bergman does not disclose or suggest such features.

E. Claims 13-16

Independent claim 13 recites “comparing the extracted color space and color quantization method of the query image with the color space and color quantization method of the multimedia data to be retrieved” (emphasis added). Bergman does not disclose or suggest these features.

In performing a color histogram transformation, search engine 1902 of the Bergman system transforms a color histogram in one color space to a color histogram in another color space, so that a query image may be compared to an image stored in an archive. In order to perform this transformation, the search engine must have knowledge of the color spaces of the images to be transformed. However, as discussed above, Bergman does not disclose or suggest comparing color quantization methods used to extract the histogram of the query image and the histograms for the images stored in its archives during a transform.

Independent claim 13 also recites “converting the color histogram of one of the extracted query multimedia data and the multimedia data to be retrieved into a color histogram having a same color space and color quantization method as the other of the extracted query multimedia data and the multimedia data to be retrieved” (emphasis added). As discussed above, Bergman does not disclose or suggest performing this conversion.

Thus, it is respectfully submitted that independent claim 13 defines over Bergman. Dependent claims 14-16 are allowable at least for the reasons discussed above with respect to independent claim 13, from which they depend, as well as for their added features.

F. Claims 17-18

Independent claim 17 recites “comparing the color spaces and color quantization methods of the query multimedia data and multimedia data to be retrieved” (emphasis added), and then performing a histogram conversion. Bergman does not disclose or suggest comparing color quantization methods performed for query color histogram Q and the color histograms formed for the images stored in its archives. Also, the claimed conversion is also performed based on color quantization method, a conversion which is not disclosed or suggested in Bergman.

Accordingly, it is respectfully submitted that independent claim 17 defines over Bergman. Dependent claim 18 is allowable at least for the reasons discussed above with respect to independent claim 17, from which it depends, as well as for its added features.

G. Independent claim 28

Claim 28 recites “a description means for describing color space and color quantization method of an extracted color histogram” (emphasis added). Bergman does not disclose or suggest a description means of this type. As previously discussed, Bergman does not disclose that, when performing its color histogram transformations, search engine 1902 takes color quantization method into consideration. Also, claim 28 recites “a second color quantizer which

extracts a color histogram of query multimedia data using a method which is same as the described color space and color quantization method” determined by the description means. Bergman also does not disclose or suggest these features. Thus, it is respectfully submitted that independent claim 28 defines over Bergman.

H. Dependent claims 29-30

Dependent claims 29-30 are allowable at least for the reasons discussed above with respect to independent claim 28, from which they depend, as well as for their added features. Further, claim 29 recites that the content-based multimedia retrieval system further comprises a retrieval unit for calculating a similarity between the color histogram of the query multimedia data extracted before and the color histogram of the multimedia data to be retrieved, and outputting multimedia data in accordance with the calculated similarity as a retrieval result, while claim 30 recites that the content-based multimedia retrieval system further comprises a database for storing the color histogram of the extracted query multimedia data. For example, referring to the embodiment shown in Figure 3 of the preset application and the corresponding disclosure at page 3, line 20 through page 11, line 24, the disclosed system includes retrieval unit 304 and database(s) 309. Bergman does not disclose or suggest such a retrieval unit or database.

I. Claim 31

Claim 31 is allowable at least for the reasons discussed above with respect to claims 28 and 29, from which it depends, as well as for its added features. Further, claim 31 recites that the description means comprises a color space description means for describing color space

information which is the basis of the color histogram of the extracted multimedia data to be retrieved, and a quantization description means for describing color quantization information which is the basis of the color histogram of the extracted multimedia data to be retrieved. For example, referring to the embodiment shown in Figure 3 of the present application and the corresponding specification disclosure at page 3, line 20 through page 11, line 24, the disclosed system includes color space descriptor(s) 306 and color quantization descriptor(s) 307.

J. Claims 32-33

Claim 32 recites “judging whether a color histogram of query multimedia data corresponding to a color space and quantization method of multimedia data to be retrieved is stored in advance” (emphasis added). Bergman does not disclose or suggest these features. That is, Bergman does not judge histograms based on color quantization nor does it perform such a judgment in advance of performing a similarity calculation between the color histograms.

Thus, it is respectfully submitted that independent claim 32 defines over Bergman. Dependent claim 33 is allowable at least for the reasons discussed above with respect to independent claim 32, from which it depends, as well as for its added features.

2. 35 U.S.C. §103(a)

Claim 12 is allowable over Bergman for at least the reasons discussed above with respect to independent claim 6, from which it depends, as well as for its added features. Further, Yaung fails to overcome the deficiencies of Bergman as Yaung is merely cited for disclosing a threshold value used in performing a similarity comparison between multimedia data. Yaung, however,

does not disclose or suggest converting a color histogram of one of a query multimedia data and multimedia data to be retrieved into a color histogram having a color space and color quantization of the other of the query multimedia data and multimedia data to be retrieved. For example, referring to the embodiment shown in Figure 5 of the present application and the corresponding specification disclosure at page 18, line 11 through page 21, line 3, the method determines whether the color histogram of the query image is different from the color histogram (color space and color quantization method) of the image to be retrieved (S505), and converts the color histogram value of the query image (S506). Accordingly, it is submitted that claim 12 is patentable over the Bergman-Yaung combination.

CLAIMS APPENDIX

The attached Claims Appendix contains a copy of the claims involved in the appeal.

EVIDENCE APPENDIX

Applicant has not provided any evidence with this appeal and therefore an Evidence Appendix is not provided.

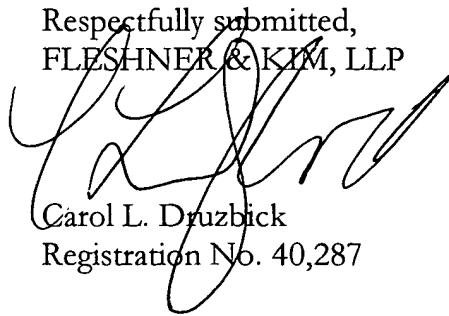
RELATED PROCEEDINGS APPENDIX

Applicant is not providing copies of related decisions and therefore a Related Proceeding Appendix is not provided.

CONCLUSION

For at least the above reasons, it is respectfully submitted that the rejections of claims 1-2, 4-7, 9-18, and 28-33 should be withdrawn and the application deemed in condition for allowance.

Respectfully submitted,
FLESHNER & KIM, LLP

A handwritten signature in black ink, appearing to read 'Carol L. Druzbeck', is written over the typed name and firm name.

Carol L. Druzbeck
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Date: July 13, 2006

CLAIMS APPENDIX

1. A content-based multimedia retrieval system, comprising
a first color quantizer which extracts a color histogram of query multimedia data;
a second color quantizer which extracts a color histogram of multimedia data to
be retrieved; and
a histogram converter which converts the color histogram of one of the extracted
query multimedia data and the multimedia data to be retrieved into a histogram having a color
space and color quantization method of the other of the extracted query multimedia data and the
multimedia data to be retrieved.
2. The content-based multimedia retrieval system according to claim 1, wherein the
multimedia data are image data or video data.
4. The content-based multimedia retrieval system according to claim 1, wherein the
content-based multimedia retrieval system further comprises a description means for describing
color space and color quantization information, which are the bases of the color histograms,
wherein the description means comprises:
a color space description means for describing color space constructing the color
histogram; and

a quantization description means for describing color quantization method constructing the color histogram.

5. The content-based multimedia retrieval system according to claim 1, wherein the histogram converter converts the color histogram of the query multimedia data so as to be corresponding to color space and color quantization method of the multimedia data to be retrieved.

6. A content-based multimedia retrieval method, comprising
inputting query multimedia data;
converting a color histogram of one of the input query multimedia data and multimedia data to be retrieved into a color histogram having a color space and color quantization method of the other of the input query multimedia data and the multimedia data to be retrieved so as to be the same as each other; and
calculating a similarity between the query multimedia data and multimedia data to be retrieved on the basis of the converted color histogram and outputting a retrieval result in accordance with the calculated similarity.

7. The content-based multimedia retrieval method according to claim 6, wherein the multimedia data is image data or video data.

9. The content-based multimedia retrieval method according to claim 6, wherein the converting process for converting into the same histogram comprises:

judging whether the color histogram of the query multimedia data has been extracted previously;

reading the extracted color histogram value and identifying the color space and color quantization method;

reading a color histogram value of the multimedia data to be retrieved and identifying the color space and color quantization method; and

converting the color histograms into the color histograms of the same color space and color quantization method when the color histogram of the query multimedia data and the color histogram of the multimedia data to be retrieved are not the same.

10. The content-based multimedia retrieval method according to claim 9, wherein the content-based multimedia retrieval method further comprises extracting a color histogram of the input query multimedia data when the color histogram of the query multimedia data has not been extracted previously.

11. The content-based multimedia retrieval method according to claim 6, wherein the process for converting into the same histogram is performed by referencing the color space

description information and quantization description information of the multimedia data to be retrieved and query multimedia data.

12. The content-based multimedia retrieval method according to claim 6, wherein the process for outputting the retrieval result comprises:

comparing the calculated similarity with a certain threshold value; and

outputting multimedia data corresponding to the color histogram of the multimedia data to be retrieved as a similar multimedia data when the similarity is larger than the certain threshold value.

13. A content-based multimedia retrieval method for retrieving multimedia data by comparing query multimedia data with multimedia data to be retrieved, comprising:

extracting a color histogram of the query multimedia data;

extracting a color histogram of the multimedia data to be retrieved;

comparing the extracted color space and color quantization method of the query image with the color space and color quantization method of the multimedia data to be retrieved; and

converting the color histogram of one of the extracted query multimedia data and the multimedia data to be retrieved into a color histogram having a same color space and color quantization method as the other of the extracted query multimedia data and the multimedia

data to be retrieved, when the color spaces and color quantization methods of the extracted multimedia data and multimedia data to be retrieved are different each other, and performing a retrieval in accordance with a similarity between the query multimedia data and multimedia data to be retrieved.

14. The content-based multimedia retrieval method according to claim 13, wherein the content-based multimedia retrieval method further comprises a step of performing a retrieval in accordance with the similarity between the extracted query multimedia data and multimedia data to be retrieved when the color space and color quantization method of the extracted query multimedia data are same as the color space and color quantization method of the multimedia data to be retrieved.

15. The content-based multimedia retrieval method according to claim 13, wherein the converting process for converting the color histogram converts the color space and color quantization method of the query multimedia data so as to correspond to the color space and color quantization method of the multimedia data to be retrieved.

16. The content-based multimedia retrieval method according to claim 13, wherein the process for converting the color histogram converts the color space and color quantization

method of the multimedia data to be retrieved so as to correspond to the color space and color quantization method of the query multimedia data.

17. A content-based multimedia retrieval method, comprising
comparing the color spaces and color quantization methods of the query multimedia data and multimedia data to be retrieved;
converting the color histogram of the query multimedia data or color histogram of the multimedia data to be retrieved when the color space and color quantization method of the query multimedia data and the color space and color quantization method of the multimedia to be retrieved are different; and
calculating a similarity between the converted or unconverted query multimedia data and multimedia data to be retrieved, and performing a retrieval in accordance with the calculated similarity.

18. The content-based multimedia retrieval method according to claim 17, wherein the color histogram converting process converts the color histogram of query multimedia data so as to correspond to the color space and color quantization method of the multimedia data to be retrieved.

28. A content-based multimedia retrieval system, comprising:

- a first color quantizer which extracts a color histogram of multimedia data to be retrieved;
- a description means for describing color space and color quantization method of an extracted color histogram; and
- a second color quantizer which extracts a color histogram of query multimedia data using a method which is same as the described color space and color quantization method in order to perform the multimedia data retrieval.

29. The content-based multimedia retrieval system according to claim 28, wherein the content-based multimedia retrieval system further comprises a retrieval unit for calculating a similarity between the color histogram of the query multimedia data extracted before and the color histogram of the multimedia data to be retrieved, and outputting multimedia data in accordance with the calculated similarity as a retrieval result.

30. The content-based multimedia retrieval system according to claim 29, wherein the content-based multimedia retrieval system further comprises a database for storing the color histogram of the extracted query multimedia data.

31. The content-based multimedia retrieval system according to claim 29, wherein the description means comprises:

a color space description means for describing color space information which is the basis of the color histogram of the extracted multimedia data to be retrieved; and

a quantization description means for describing color quantization information which is the basis of the color histogram of the extracted multimedia data to be retrieved.

32. A content-based multimedia retrieval method, comprising:

judging whether a color histogram of query multimedia data corresponding to a color space and quantization method of multimedia data to be retrieved is stored in advance before; and

calculating a similarity between the color histogram of the stored query multimedia data and the color histogram of the multimedia data to be retrieved and performing a multimedia retrieval in accordance with the calculated similarity.

33. The content-based multimedia retrieval method according to claim 32, wherein the content-based multimedia retrieval method further comprises:

quantizing and extracting the query multimedia data with the color space and color quantization method of the multimedia data to be retrieved when the color histogram of the query multimedia data is not stored before;

storing the color histogram of the quantized and extracted query multimedia data;
and

calculating a similarity between the color histogram of the extracted query multimedia data and the color histogram of the multimedia data to be retrieved and performing a multimedia retrieval in accordance with the calculated similarity.